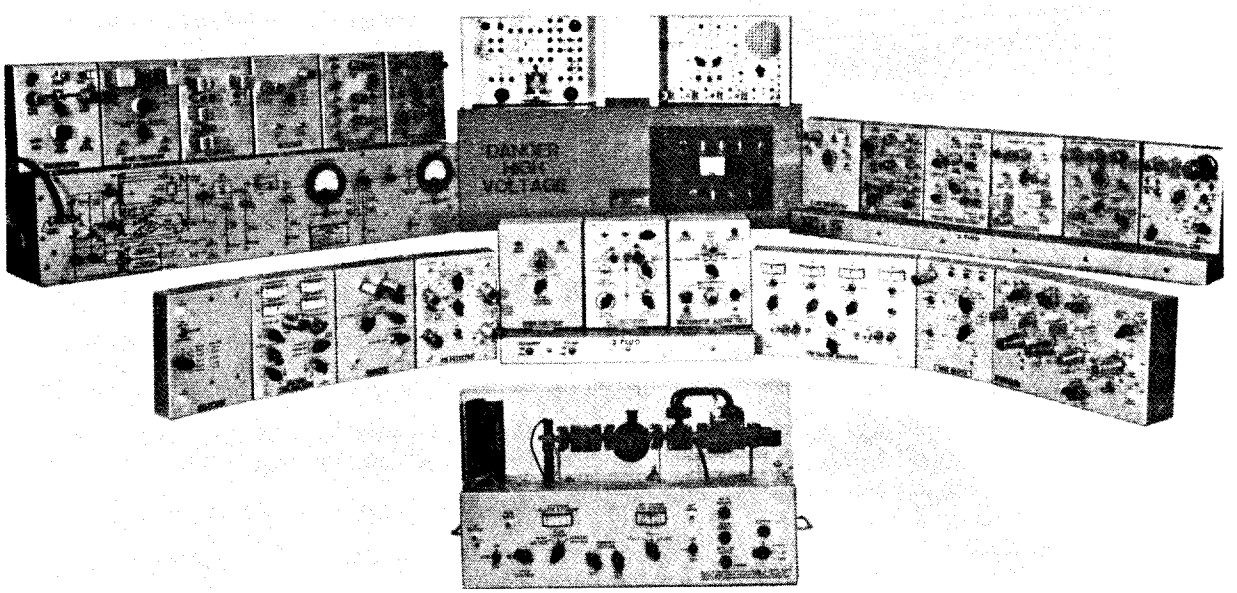

BASIC ELECTRONICS STUDENT TRAINER, DEVICE 6B19 SERIES

TRAINING CATEGORY:

BASIC SCIENCE (Electronics)

ORIGINATING AGENCY:

CHNAVPERS

SECURITY CLASSIFICATION:

Device 6B19 is classified.

INTENDED USE:

a. For classroom demonstrations at any school or activity teaching basic or advanced electronics.

b. For supervised laboratory experiments by students to provide practice and develop skill in the use of test equipment and in troubleshooting.

c. To test student proficiency.

FUNCTIONAL DESCRIPTION:

Device 6B19 consists of twenty-seven (27) display panels, each of which is mounted on a chassis which houses the electrical components that operate the display. The face of each panel schematically depicts an electronic circuit, with all switches, jacks, test points, and circuit components identified. Test equipment and meters may be inserted into the various circuits by using standard plug-in test leads.

The twenty-seven (27) panels, which may be used individually or in many combinations, represent the following circuits:

1. Basic Power Unit
2. Voltage Regulator DC
3. RF Amplifier
4. Oscillator
5. Mixer-Converter
6. IF Amplifier (455 KHz)
7. Detector
8. Audio Amplifier
9. Vacuum Tube Analyzer

10. Transistor Analyzer
11. Transistor Receiver
12. Delay Line
13. RC Oscillator
14. IF Amplifier (Video)
15. Cathode Follower
16. Video Amplifier
17. Modulator FM and AM
18. Square Wave Generator
19. Clipper Clamper
20. Sweep Generator
21. Multivibrator
22. FM Detectors
23. Counter
24. Class B & C Amplifier
25. Plug Unit (Three (3) Plugs)
26. Plug Unit (Six (6) Plugs)
27. Master Power Unit

Realistic presentations and situations can be developed on these panels, and these situations can be tailored to introduce either simple or advanced circuitry. Components in the circuitry may also be changed to introduce planned malfunctions.

Although the panels are designed for maximum safety, with all wiring and components completely enclosed and the chassis grounded for minimum shock hazard, some panels require special safety precautions which must be supervised by the instructor.

After being checked out in standard safety precautions and procedures and in the use of the test equipment, students are allowed access to the device components, under supervision of the instructor, and may perform various experiments and make measurements and tests as they would with operational equipment.

The physical layout of the panels provides easy accessibility to the components and also permits bench setups. Multiple test points facilitate connection of test equipment and minimize the physical labor aspects of the training, thus increasing the efficiency of the training cycle.

PHYSICAL INFORMATION:

Twenty (20) of the panels are 6" x 8" x 2"; four (4) are approximately 8" x 12" x 3"; one (1) is 8" x 36" x 7-5/16"; one (1) is 7-5/16" x 18" x 2-3/4"; one (1) is 7-5/16" x 36" x 2-3/4"; one (1) is 10" x 30" x 10"; and one (1) is 10" x 21" x 6".

EQUIPMENT REQUIRED (NOT SUPPLIED):

The following test equipment or equivalent:

1. Two (2) Oscilloscopes, Tektronix W/x 10 probe), 535A
2. Two (2) Multimeters (VOM), Simpson, 260
3. Two (2) Plug-In Preamplifiers, Dual Trace, Tektronix, CA
4. One (1) RF Detector (Coax), Hewlett-Packard, 423A
5. One (1) Audio Generator, Wavetek, 105
6. One (1) VTVM, Hewlett-Packard, 410B
7. One (1) Frequency Counter, Beckman 7370
8. One (1) Sweep/Signal Generator, Telonic (W/L1 Plug-In), SM-2000
9. One (1) RF Voltmeter, Boonton, 91CA
10. One (1) RMS Voltmeter, Ballantine, 320A
11. One (1) Variac, General Radio, W5MT3
12. One (1) Navy Test Unit (required for Master Power Unit)

The following components:

1. One (1) PNP Transistor, switching, germanium Texas Instruments, USN2N1309
2. One (1) NPN Transistor, switching, germanium, Texas Instruments, USN2N1308
3. One (1) Resistor, fixed comp., 330-ohm, 2 w RC342GF3300K
4. One (1) Resistor, fixed comp., 47-ohm, 2 w, RC342GF470K
5. One (1) Resistor, fixed comp., 33-ohm, 2 w, RC342GF330K
6. One (1) Resistor, fixed comp., 75-ohm, 1/2 w, RC20GF750K
7. One (1) Resistor, fixed comp., 47-ohm, 1/2 w, RC20GF470K
8. One (1) 50-ohm Dummy Load
9. Two (2) Loud Speakers (required with Klystron Transceiver)
10. Standard Plug-in test leads

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POWER REQUIREMENTS:

117 Vac, 60 Hz, for integral power supplies in training panels.

117 vac, 60 Hz, for audio signal generator used as external power source.

PUBLICATIONS FURNISHED:

Maintenance Handbook with Parts List for Device 6B19, NAVSO P-3119 (U)

REFERENCE PUBLICATIONS (NOT SUPPLIED):

1. NAVSHIPS 0967-000-0120, Electronics Installation and Maintenance Book (Electronic Circuits, Test Methods and Practices)
2. NAVPERS 93400A Series, Fundamentals of Electronics (8 Volumes)
3. NAVPERS 10084, Introduction to Electronics
4. NAVPERS 10086A, Basic Electricity
5. NAVPERS 10087A, Basic Electronics
6. NAVPERS 10188B, Electronics Technician 3

PERSONNEL:

Instructors:	One (1) for each four (4) trainees) qualified to teach basic and advanced electronics.
Trainees:	Four (4) trainees per one (1) instructor.
Operators:	Instructor or trainee operated.
Maintenance:	One (1) electronic technician (on call)

CONTRACT IDENTIFICATION:

Device 6B19 Series was manufactured by Symetrics Engineering Corporation of Florida, Inc., Satellite Beach, FL under NAVTRASYSCEN Contract No. N61339-66-C-0145.

DEVICE	LOCAL STOCK NUMBER
6B19/1	6910-LL-C00-3552
6B19/2	6910-LL-C00-3553
6B19/3	6910-LL-C00-3554
6B19/4	6910-LL-C00-3555
6B19/5	6910-LL-C00-3556
6B19/6	6910-LL-C00-3557
6B19/7	6910-LL-C00-3558
6B19/8	6910-LL-C00-3559
6819/9	6910-LL-C00-3560
6B19/10	6910-LL-C00-3561
6B19/11	6910-LL-C00-3562
6B19/12	6910-LL-C00-3563
6B19/13	6910-LL-C00-3564
6B19/15	6910-LL-C00-7202
6B19/16	6910-LL-C00-3566
6B19/17	6910-LL-C00-3567
6B19/18	6910-LL-C00-3568
6B19/19	6910-LL-C00-3569
6B19/20	6910-LL-C00-3570
6B19/21	6910-LL-C00-3571
6B19/22	6910-LL-C00-3572
6B19/23	6910-LL-C00-7203
6B19/25	6910-LL-C00-3574
6B19/26	6910-LL-C00-3575
6B19/27	6910-LL-C00-3576
6B19/28	6910-LL-C00-3577
6B19/29	6910-LL-C00-3578